P-101B

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FIELD TEST AGENDA

P-101B, Communication System, Infrared

I. Test Objectives

A. Range Tests

The primary objective of the tests is to determine the performance of the equipment as a function of the range and to fix the approximate maximum ACW ranges for day and night operations.

B. General Equipment Performance Tests

The secondary objective of the test is to determine the general equipment performance under typical operating conditions. Particular note will be made of these points:

1. Mechanical Features

   a. Apparent quality of mechanical construction overall

   b. Waterproofing of equipment closed and open

   c. Apparent resistance to shock and vibration

   d. Ruggedness and stability of tripod table

   e. Yoke mount performance and limitations

      (1) Maximum angular swing of equipment in azimuth and elevation

      (2) Presence of wobble, backlash, stickiness, etc. in the yoke mounting

      (3) Accuracy of horizontal and vertical circles and the ease with which they may be read

      (4) Mechanical sweep mechanism performance

   f. Mechanical construction of the optical systems.

      (1) Quality of glass objective mirror mounting

      (2) Ruggedness and stability of mount for the optical sight

      (3) Ruggedness and reliability of the bellows system

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(4) Stability of the galvanometer system of modulation

(5) Protection for and mounting of the glass IR filter

2. Optical Features

a. I. R. viewer

(1) Sensitivity (night and day ranges)

(2) Field of view

(3) Quality of reticle and ease of sighting

(4) Optical quality of image

(5) Alignment of viewer with main optical system

b. Optical sight

(1) Field of view

(2) Quality of reticle and ease of sighting

(3) Alignment of sight with main optical system

3. Electrical Features

a. Amplifier noise level

b. Signal intelligibility

c. Possibilities of voice reeggnition

d. Battery performance

C. Operational Feasibility Tests

The third objective of the test is to determine the feasibility of using the equipment under various operational conditions. Particular attention will be paid to the following items:

1. The ease of opening the gear and assembling it, e.g., the time required to put the equipment into operation

2. The value of the controls provided and the ease with which they may be used

3. The suitability of the two foot high tripod for operations in varying terrain

4. The suitability of the angular swings in azimuth and elevation, relative to the tripod base, made possible by the present equipment design

5. The operational procedures used and the time required to accomplish the search-find operation using each procedure

D. Complete Photographic Coverage of the Equipment in Operation
The fourth objective of the test is to obtain pictures of the equipment in operation. It is felt that photographs of the terminal areas, both close ups and telescopic views from the other terminal, would be of interest to readers of a test report, since such photographs would give an excellent idea of field conditions, etc.

II. Test Procedures

A. Selection of Field Test Locations

1. Using the 1:62,500 USGS maps of the area, select 2 or 3 locations for line-of-sight ranges of 1,2,4,6,8 miles approximately

2. Make elevation plots of each of these ranges to check for line-of-sight.

3. Select probable night and day landmarks from the map to facilitate the location of the terminal stations

4. Note the respective bearings of each station from the other in azimuth and elevation as obtained from the map. Also note the bearings of the landmarks.

B. Field Test Procedures

1. Form two teams of two men each; one team for each station of the range in question

2. Make up signal plans for the ranges selected in IIA including:

a. Map overlay of both stations

b. Map

c. Elevation plots

d. Bearing of each station from the other

e. List of day and night landmarks and their bearings

f. Time to initiate search-find procedure

g. Time to discontinue search-find procedure failing contact

3. Select a 4 mile range from those of II.A

   a. Send one team to each station by daylight

   b. On this first visit to each station by daylight

      (1) Locate an operating area and set up gear. Record time required

      (2) Locate position of other station by landmarks, compass bearing

      (3) Using optical sight and mechanical sweep execute search-find procedure until contact is established. Record time required.

      (4) Note the horizontal and vertical circle readings for various landmarks

      (5) Take photos of

         (a) The gear in operation and its surroundings

         (b) The other station with 50 and 400 mm lenses

      (6) Review the General Equipment Performance Tests and make pertinent comments

      (7) Record weather conditions, visibility, temperature, etc.

   c. On the second visit to each station by night

      (1) Set up the gear in the previously located area. Record the time required

      (2) Locate position of other station from bearings of landmarks previously noted

      (3) Using infrared viewer and mechanical sweep execute sweep-find procedure. Establish contact. Record time required.

      (4) Review General Equipment Performance Tests and make pertinent comments

      (5) Record weahher conditions

4. Repeat the procedure outlined under B, 3 for other ranges, shorter or longer as required under different terrain conditions

5. Repeat B,3,c for a previously unsurveyed site

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III. Test Results

A. A list of the ranges obtained with the signal quality and weather conditions noted

B. Descriptions of the operational situations involved, the search-find methods used for each situation, and the time required to establish contact in each case

C. A description of the overall equipment performance with suggested improvements

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